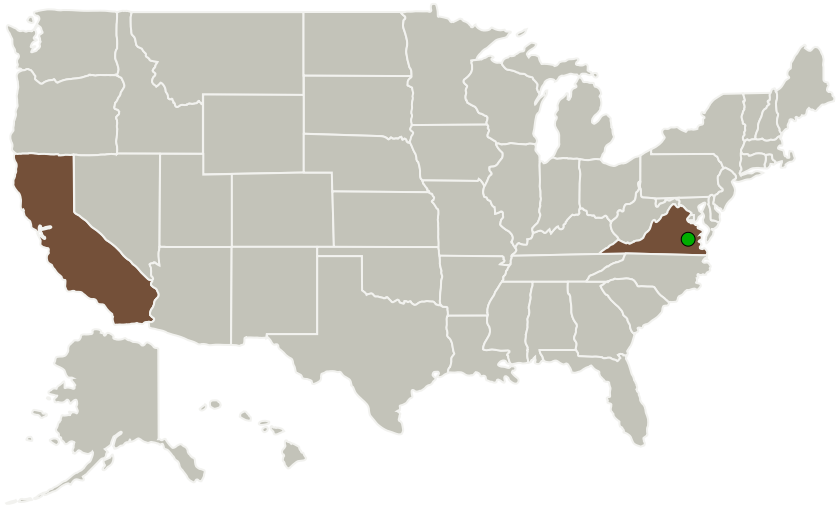
Shape Memory Alloy Adaptive Structures, Phase I

Completed Technology Project (2015 - 2015)

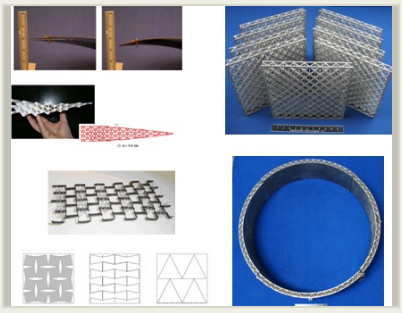
Project Introduction

This SBIR Phase I effort will demonstrate and scale up an innovative manufacturing process that yields aerospace grade shape memory alloy (SMA) solids and periodic cellular structures. Bulk-sized SMA components and structures are extremely difficult to fabricate as castings due to the compositional sensitivity of these alloys. Remelting also leads to brittleness from the presence of deleterious phases and precipitates that form upon metal solidification. For cost effectiveness, structural integrity, and shape memory and/or superelastic behavior, SMA castings with the requisite composition-microstructure-properties are needed and will be developed in this work.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
Transition45 Technologies, Inc.	Lead Organization	Industry Small Disadvantaged Business (SDB)	Orange, California
Langley Research Center(LaRC)	Supporting Organization	NASA Center	Hampton, Virginia



Shape Memory Alloy Adaptive Structures, Phase I Briefing Chart Image

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Primary U.S. Work Locations	
California	Virginia

Project Transitions

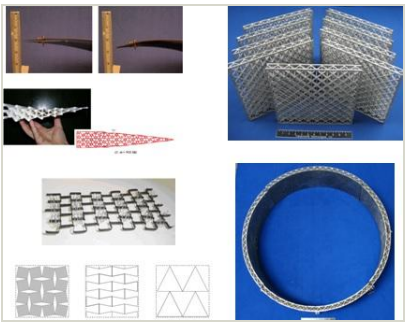
July 2015: Project Start

December 2015: Closed out

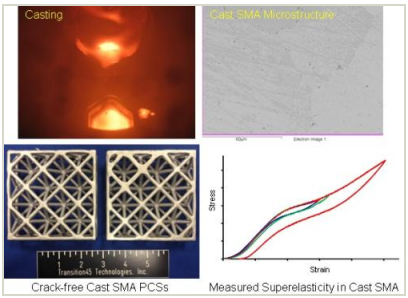
Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/139445)*

Images



Briefing Chart Image
Shape Memory Alloy Adaptive Structures, Phase I Briefing Chart Image
(https://techport.nasa.gov/image/136641)



Final Summary Chart Image
Shape Memory Alloy Adaptive Structures, Phase I Project Image
(https://techport.nasa.gov/image/129616)

Organizational Responsibility

Responsible Mission Directorate:
Space Technology Mission Directorate (STMD)

Lead Organization:
Transition45 Technologies, Inc.

Responsible Program:
Small Business Innovation Research/Small Business Tech Transfer

Project Management

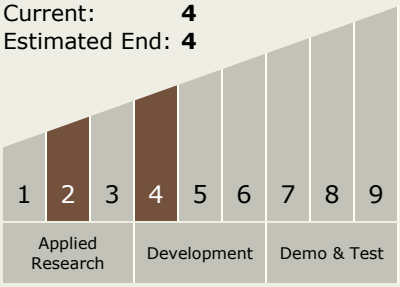
Program Director:
Jason L Kessler

Program Manager:
Carlos Torrez

Principal Investigator:
Edward Chen

Technology Maturity (TRL)

Start: **2**
Current: **4**
Estimated End: **4**



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Technology Areas

Primary:

- TX12 Materials, Structures, Mechanical Systems, and Manufacturing
  - TX12.1 Materials
    - TX12.1.8 Smart Materials

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System